

LIGO HANFORD OBSERVATORY

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# MEMORANDUM

DATE: September 4, 2013

|  |  |
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| TO: | ISC team |
| FROM: | Daniel Sigg |
| SUBJECT: | Modifications to the RF sources |
| Refer to: | LIGO- E1300698-v1 |

The RF sources for the ALS frequencies are partially wrong. This is part due to an initial error and part due to the fact that the third interferometer has been converted into a straight configuration. Since the IMC lengths are all identical now, so should the RF frequencies.

Change all ALS frequencies to the nominal H1/L1 frequencies. This is what it should be:

H1X/L1X: f=24.407079 MHz,

H1Y/L1Y: f=24.482125 MHz,

H2X: f=24.440707 MHz, and

H2Y: f=24.515730 MHz.

And here is what we have:

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| --- | --- | --- | --- | --- | --- |
| **S/N** | **Freq. (MHz)** | **OCXO** | **Description** | **New (MHz)** | **Location** |
| S1000575 | 24.407079 | 500-14927 | H1 EX | — | H1 EX |
| S1000576 | 24.407079 | 500-14927 | LHO spare | — | LHO spare |
| S1000577 | 24.407079 | 500-14927 | L1 EX | — | L1 EX |
| S1000578 | 24.407079 | 500-14927 | LLO spare | — | LLO spare |
| S1000579 | 24.515730 | 500-14927 | H2 EY | 24.407079 | H2 EX |
| S1000580 | 24.515730 | 500-14927 | LHO spare | 79.200000 | L1 corner |
| S1000581 | 24.440707 | 500-14927 | H1 EY | 24.482125 | H1 EY |
| S1000582 | 24.440707 | 500-14927 | LHO spare | 79.200000 | H2 corner |
| S1000583 | 24.440707 | 500-14927 | L1 EY | 24.482125 | L1 EY |
| S1000584 | 24.440707 | 500-14927 | LLO spare | 24.482125 | LLO spare |
| S1000585 | 24.482125 | 500-14927 | H2 EX | — | H2 EY |
| S1000586 | 24.482125 | 500-14927 | LHO spare | — | LHO spare |

Change the H2 IMC frequency to the same as H1/L1:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S/N** | **Freq. (MHz)** | **OCXO** | **Description** | **New (MHz)** | **Location** |
| S1000569 | 24.078360 | 500-14927 | H1 IMC corner | — | H1 IMC corner |
| S1000570 | 24.078360 | 500-14927 | LHO spare | — | LHO spare |
| S1000571 | 24.078360 | 500-14927 | L1 IMC corner | — | L1 IMC corner |
| S1000572 | 24.078360 | 500-14927 | LLO spare | — | LLO spare |
| S1000573 | 22.993090 | 500-14927 | H2 IMC corner | 24.078360 | H2 IMC corner |
| S1000574 | 22.993090 | 500-14927 | LHO spare | 79.200000 | H1 corner |

These changes are covered by ECRs, [E1300697](https://dcc.ligo.org/LIGO-E1300697) and [E1300659](https://dcc.ligo.org/E1300659).

There are no changes to the schematics.

**Modifications to the RF source (D080702)**:

S/N: S1000581, S1000582, S1000583, S1000584, S1000585, S1000586, S1000579, S1000580, S1000573, S1000574

Open the chassis

De-cable and remove the magnetic shielded enclosure

Remove the oscillator board from the magnetic shielded enclosure

Change the OCXO

Reassemble the magnetic shielded enclosure

Reinstall and cable up the magnetic shielded enclosure

Retest using E1000059-v2, sections 13, 14, 17 and 18.

**Modifications to the oscillator test box (D0902705):**

S/N: S1103738, S1103739

Change 4th OCXO to 24.482125 MHz (from 24.440707 MHz)

Update label on front panel

S/N: S1103740

Change 2nd OCXO to 24.078360 MHz (from 22.993090 MHz)

Change 3rd OCXO to 24.407079 MHz (from 24.515730 MHz)

Update label on front panel